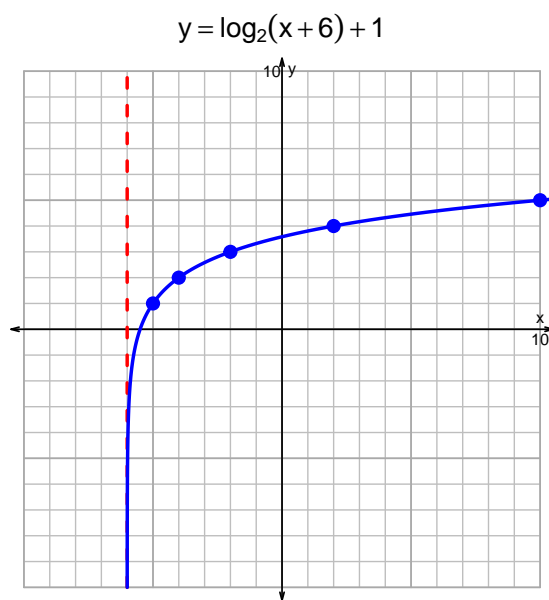
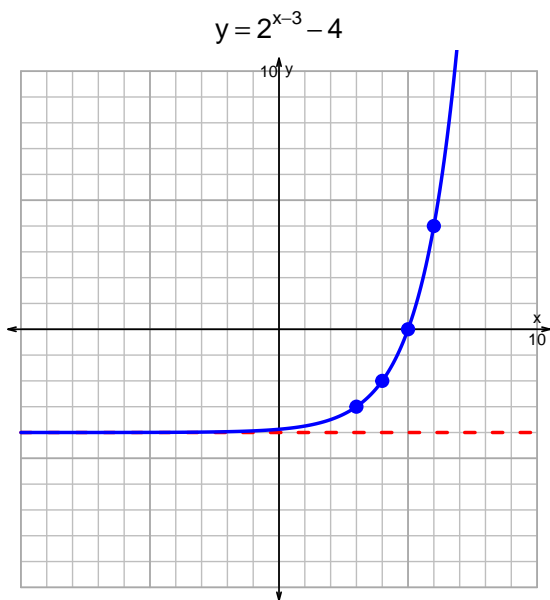


Name: _____

Date: _____

s18: EXP LOG (SLTN v351)

1. (10 pts) Graph $y = 2^{x-3} - 4$ and $y = \log_2(x+6) + 1$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-29 = \left(\frac{-5}{7} \right) \cdot 10^{-3t/4}$$

Divide both sides by $\frac{-5}{7}$.

$$\frac{29 \cdot 7}{5} = 10^{-3t/4}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{29 \cdot 7}{5} \right) = \frac{-3t}{4}$$

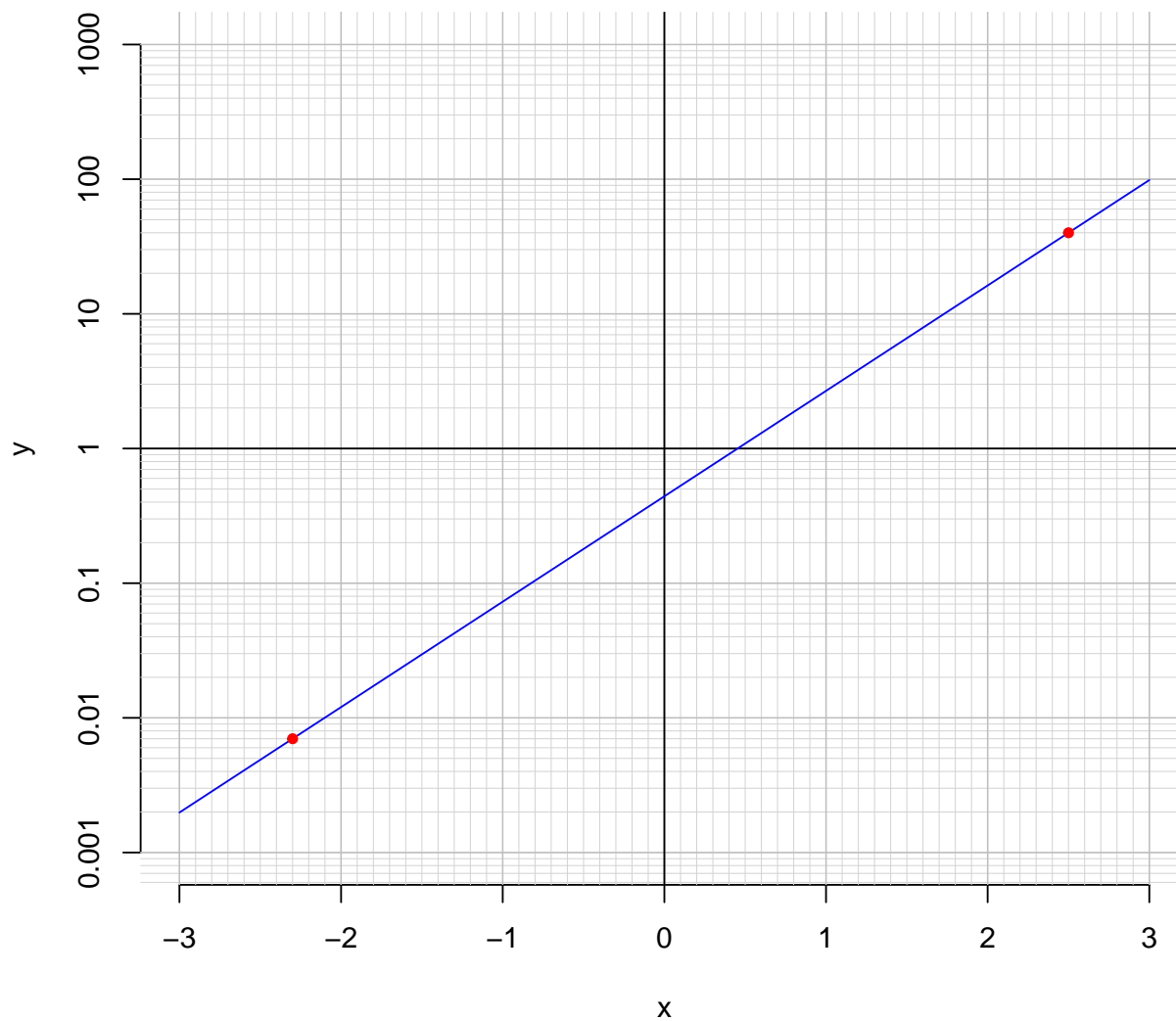
Divide both sides by $\frac{-3}{4}$.

$$\frac{-4}{3} \cdot \log_{10} \left(\frac{29 \cdot 7}{5} \right) = t$$

Switch sides.

$$t = \frac{-4}{3} \cdot \log_{10} \left(\frac{29 \cdot 7}{5} \right)$$

3. (10 pts) An exponential function $f(x) = 0.442 \cdot e^{1.8x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(2.5)$.

$$f(2.5) = 40$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{1.8} \cdot \ln\left(\frac{x}{0.442}\right)$$

Using the plot above, evaluate $f^{-1}(0.007)$.

$$f^{-1}(0.007) = -2.3$$